

1-Machine as per Folio FA 599 Rev: AA & Dwg D3391 Rev: J
2-Deburr

Work Order ID 154257***154257***

Page 2

Wednesday, December 07, 2016 10:24:51 A

Item ID: D3391-015

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Aft Tube Assembly

Start Date: 12/13/2016 Start Qty: 1.00

1

Cust Item ID:

Required Date: 12/22/2016 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start

NR1

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	QC2- Inspect parts off machine FAI/FAIB	0.00							DAS 33 9-89
130						<u>1</u>	<u>0</u>		
QC	Memo	0.00							16/12/15
Quality Control									
140	QC8- Inspect parts - second check	0.00							DAS 20 9-89
140						<u>1</u>	<u>0</u>		16-12-19
QC	Memo	0.00							
Quality Control									
150	Skidtubes	0.00							
150									
Skidtubes	Memo	0.05							
Skidtubes	1-Drill (PILOT HOLE) aft cap holes per Dwg D3391 using DT8803 **Hole bend tangent as per Folio-11**								

 16-12-20

Work Order ID 154257***154257***

Page 3

Wednesday, December 07, 2016 10:24:51 A

Item ID: D3391-015 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Aft Tube Assembly
Start Date: 12/13/2016 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 12/22/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
160	BENDING MACHINE - SKIDTUBES	0.05							
160									
CNC Bend 1	Memo	0.06							
CNC Delta 100 Bender	Form as per Dwg D3391 **Folio -11**								
	H-4.5"								
170	QC5- Inspect part completeness to step on W/O	0.00							
170									
QC	Memo	0.00							
Quality Control									

DAS 18 9-88

16-12-20

16-12-20

Work Order ID 154257

Wednesday, December 07, 2016 10:24:51 A

154257

Page 4

Item ID: D3391-015

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Aft Tube Assembly

Start Date: 12/13/2016 Start Qty: 1.00

1

Cust Item ID:

Required Date: 12/22/2016 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

180

180

Skidtubes

Skidtubes

Skidtubes

Memo

0.19

1-Open Aft cap pilot hole to .208" as per Dwg D3391

2-Drill float bag holes using DT8809 as per Dwg D3391(All holes)

3-Drill wearplate holes as per Dwg D3391 using DT8878(Mid Tube) & DT8217
Wearplate Jig .

*****Do Not Open To Finished Size*****

4-Drill Wearshoe holes as per DWG D3391 using DT8939 locating from 2
previously drilled aft wearplate holes.5- Tranfer holes from D3391-013 for electric step. Open holes as per dwg D3391
section ~~cc~~ ^{1-1/3-2/K-K}6- Detail DD, open (5) forward wearplate holes 0.375", then use DT10247 and
drill holes for nutplates and c'sink.7-Open wearplate holes to 0.297" and c'bore as per dwg D3391. ***SIX
FARTHEST AFT HOLES ONLY***8-C'bore section ~~cc~~ ^{SS} and open to finish size9-Open up ~~all wearshoe wearplate to 0.297" and c'bore~~ and float bag holes to
0.328" as per Dwg D3391.10-Debur
^{2 c'sink}

16-12-22 DT DP

DP 16-12-22

DP 17-1-3

Work Order ID 154257***154257***

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Wednesday, December 07, 2016 10:24:51 A

Item ID: D3391-015

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Aft Tube Assembly

Start Date: 12/13/2016 Start Qty: 1.00

1

Cust Item ID:

Required Date: 12/22/2016 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start

NR1

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
190	QC5- Inspect part completeness to step on W/O	0.00							
190									
QC	Memo	0.00							
Quality Control									
200	Chemical Conversion Coat per QSI005 4.1	0.00							
200									
HandFinish	Memo	0.10							
Hand Finishing									
205	QC7-Inspect Chemical Conversion Coat	0.00							
205									
QC	Memo	0.00							
Quality Control									

DAS
9
9-89

(X1) 17-1-5 2017/01/04
BEB

DAS
03
9-89
17-1-5

Work Order ID 154257***154257***

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Wednesday, December 07, 2016 10:24:51 A

Item ID: D3391-015

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Aft Tube Assembly

Start Date: 12/13/2016 Start Qty: 1.00

1

Cust Item ID:

Required Date: 12/22/2016 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start

NR1

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

210

0.00

210

Skidtubes

0.19

Skidtubes

Memo

1- Instal spacers as per dwg D3391

A/R Magnabond 6398 Batch: M134167exp. date: 12-1-20

cure time 12hrs as per QSI0015

2- Grind crossbolts flush

3- Back drill using #9 drill

4- Touchup Magnabond

5- Deburr

220

0.00

220

QC

QC5- Inspect part completeness to step on W/O

Memo

0.00

Quality Control

D 12.01.06PP

Work Order ID 154257***154257***

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Wednesday, December 07, 2016 10:24:51 A

Item ID: D3391-015

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Aft Tube Assembly

Start Date: 12/13/2016 Start Qty: 1.00

1

Cust Item ID:

Required Date: 12/22/2016 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start

NR1

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
225	Pressure Wash per QSI005 4.3	0.00							
225									
HandFinish	Memo	0.07							
Hand Finishing	AND REALODINE AS PER PAR09-043								
230		0.00							
230									
SprayPaint	Memo	0.00							
Spray Painting	PRIME AS PER DWG AND QSI005 4.2.1.3.3 PRIMER BATCH: <u>135929</u> PAINT AS PER DWG AND QSI005 4.2.2.4 PAINT: <u>136205</u>								
240	QC14- Inspect Spray Paint	0.00							
240									
QC	Memo	0.00							
Quality Control									

DAS 15 9-89

Work Order ID 154257***154257***

Page 8

Wednesday, December 07, 2016 10:24:51 A

Item ID: D3391-015 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Aft Tube Assembly
Start Date: 12/13/2016 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 12/22/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
250	HandFinishing	0.00							
250	HandFinish								
Hand Finishing	Memo	0.11							
	1- Install nutplate using MS20601AD4W4 (qty12) in the six most forward holes and MS20601AD4W9 (qty8) in the four aft holes. Rivet nutplates as per section TT on sheet 11.								
	2-Install inserts per dwg D3391								
	3-Install Aft Cap as per Dwg D3391								
	A/R Sikaflex-241/-291 <u>M136093</u>								
	Sikaflex expiry date: <u>17109</u>								
	4- INSTALL WEARPLATE AS PER DWG								
260	QC5- Inspect part completeness to step on W/O	0.00							
260	QC								
Quality Control	Memo	0.00							

DAS
38
9-89

JAN 10 2017

Work Order ID 154257***154257***

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Wednesday, December 07, 2016 10:24:51 A

Item ID: D3391-015 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Aft Tube Assembly
Start Date: 12/13/2016 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 12/22/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
270	Identify as per dwg & Stock Location: <u>W10</u>	0.00							
270		0.00	0412-742-041/13154251			12	4	1710101	
Packaging	Memo								
Packaging									
280	QC21- Final Inspection - Work Order Release	0.00							
280		0.02							
QC	Memo								
Quality Control									

DAS
21
9-89

JAN 12 2017



JAN 10 2017

Picklist Print

Wednesday, December 07, 2016 10:24:58 AM

Page 1

Work Order ID: 154257

154257

Parent Item: D3391-015

D3391-015

Parent Item Name: Aft Tube Assembly

Start Date: 12/13/2016

Required Date: 12/22/2016

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP rev A 05.12.13 New issue EC
IPP rev B 06.02.09 Dwg @ revD EC
IPP rev C 07.03.13 dwg @revF ec
IPP rev D 07.10.31 ecn 1053P EC
IPP Rev:E ECN 1056 07-11-13 DD verified by: EC
IPP Rev:F 08-09-10 revH as per dwg DD verified by:EC IPP Rev:G
11.11.14 AS PER REV.I DD verified by:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

NAS1149C0332R

Purchased

No

100

Each

5,036.000

10

10

NAS1149C0332R

1710104

WASHER

Location

Loc Qty

Loc Code

FP001

668

m135672

33

m135948

14

m136199

621

GA

74

m133284

74

ST260a

3500

m135466

1000

m136042

500

m136301

2000

ST266

794

m135408

94

m135766

500

m135908

200

x10

Picklist Print

Page 2

Wednesday, December 07, 2016 10:24:58 AM

Work Order ID: 154257

154257

Parent Item: D3391-015

D3391-015

Parent Item Name: Aft Tube Assembly

Start Date: 12/13/2016

Required Date: 12/22/2016

Start Qty: 1.00

Required Qty: 1.00

D6014-090

Manufactured No

210

Each

40.0000

1

1

D6014-090******

ALUMINUM EXTRUSION

LocationLoc QtyLoc Code

LG003

40

134851

10

139426

30

ALS4-1032-130

AELS4-1032-130

Purchased

No

250

Each

2,950.000

8

8

ALS4-1032-130******

Rivnut

LocationLoc QtyLoc Code

CCK004

2164

M135442

2164

FG

50

FG

M135442

50

FP001

728

M133077

72

M135442

656

ST556

8

M135442

8

ALS4-1032-225

AELS8-1032-225

Purchased

No

250

Each

4,966.000

4

4

ALS4-1032-225******

Rivnut

LocationLoc QtyLoc Code

FG

30

M134975

20

M135998

10

FP001

4936

M135603

40

M135920

38

M135998

4708

M136265

150

Wednesday, December 07, 2016 10:24:58 AM

Shop Packet Print

Page 2

Picklist Print

Wednesday, December 07, 2016 10:24:58 AM

Work Order ID: 154257

154257

Parent Item: D3391-015

D3391-015

Parent Item Name: Aft Tube Assembly

Start Date: 12/13/2016

Required Date: 12/22/2016

Start Qty: 1.00

Required Qty: 1.00

ALS4-428-165

Purchased

No

250

Each

43.0000

4

4

AI S4-428-165

INSERT

all 12/10/16

Location

Loc Qty

Loc Code

FG

10

117769

10

FP001

33

117769

33

x4

AN3C4A

Purchased

No

250

Each

1,932.000

6

6

AN3C4A

Bolt

all 12/10/16

Location

Loc Qty

Loc Code

FG

20

122814

20

M136295

x6

FP001

706

M133440

7

M134396

41

M134509

6

M134606

29

M134676

44

M134762

106

M134861

13

M135058

123

M135127

22

M135297

52

M135442

2

M135774

53

M135864

64

M135948

144

OVER002

1000

M136295

1000

ST350

206

M135704

206

Picklist Print

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Wednesday, December 07, 2016 10:24:58 AM

Work Order ID: 154257

154257

Parent Item: D3391-015

D3391-015

Parent Item Name: Aft Tube Assembly

Start Date: 12/13/2016

Required Date: 12/22/2016

Start Qty: 1.00

Required Qty: 1.00

AN3C5A

Purchased

No

250

Each

1,216.000

4

4

AN3C5A

Bolt

all 17/01/09

Location

Loc Qty

Loc Code

FG

5

122800

5

FP001

398

M136295

398

OVER002

600

M136047

500

M136182

100

ST350

213

M134676

13

M135442

200

D2646

Manufactured

No

250

Each

47.0000

1

1

D2646

Aft Cap

all 17/01/09

Location

Loc Qty

Loc Code

FG

4

85848

2

90495

2

FP001

43

127924

1

136885

3

141214

9

149748

30

xl

Picklist Print

Wednesday, December 07, 2016 10:24:58 AM

Page 5

Work Order ID: 154257

154257

Parent Item: D3391-015

D3391-015

Item Name: Aft Tube Assembly

Start Date: 12/13/2016

Required Date: 12/22/2016

Start Qty: 1.00

Required Qty: 1.00

70-4-200

Manufactured No

250

Each

70.0000

14

14

D3670-4-200

Bushing

**

DP 12-1-5

Location

Loc Qty

Loc Code

FG

10

87709

10

LG001

60

138819

3

150477

57

14

D3672-1

Manufactured No

250

Each

948.0000

2

2

D3672-1

Washer, Phenolic

**

el 12/10/16

Location

Loc Qty

Loc Code

FG

10

85222

10

FP001

780

112218

4

134785

276

150074

500

ST049

158

147077

158

22

D4095-047

Manufactured No

250

Each

12.0000

1

1

D4095-047

Wearpad Aft

**

el 12/10/16

Location

Loc Qty

Loc Code

FP001

12

146026

2

149261

10

21

Picklist Print

Wednesday, December 07, 2016 10:24:58 AM

Work Order ID: 154257

154257

Parent Item: D3391-015

D3391-015

Parent Item Name: Aft Tube Assembly

Start Date: 12/13/2016

Required Date: 12/22/2016

Start Qty: 1.00

Required Qty: 1.00

D4095-049 Manufactured No

250 Each

12.0000 1 1

D4095-049

Wearpad Aft

**

all 17/01/09

Location

Loc Qty

Loc Code

FP001

12

147976

4

149259

4

150415

4

MS20601-AD4W4

Purchased

No

250 Each

560.0000 12 12

MS20601-AD4W4

Rivet

**

DP 17-1-9

Location

Loc Qty

Loc Code

over004

200

m135470

200

ST307

360

113064

14

113749

185

m134181

11

m136150

150

MS20601-AD4W9

Purchased

No

250 Each

154.0000 8 8

MS20601-AD4W9

RIVET

**

DP 17-1-9

Location

Loc Qty

Loc Code

Mezz

10

19191

10

ST307

144

m134215

144

Picklist Print

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Wednesday, December 07, 2016 10:24:58 AM

Work Order ID: 154257

154257

Parent Item: D3391-015

D3391-015

Parent Item Name: Aft Tube Assembly

Start Date: 12/13/2016

Required Date: 12/22/2016

Start Qty: 1.00

Required Qty: 1.00

MS21075L5

Purchased

No

250

Each

207.0000

10

10

MS21075L5

Nut Plate

**

DP 17-1-9

Location

Loc Qty

Loc Code

GA	13
m135470	13
LG001	24
m135470	24
ST298	170
m133498	20
m135603	100
m136016	50

M136450

10

DART AEROSPACE LTD		Work Order: 154257
Description: Float Skidtube (412)		Part Number: D3391-3
Inspection Dwg: D3391	Rev: J	Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
Lathe Section						
14.000	+/-0.010	14.000	✓		tape	
3.500	+/-0.010	3.447	✓		vernier	
Ø3.200	+/-0.010	Ø3.2085	✓			
Ø3.750	+/-0.010	Ø3.734	✓	✓		
30° x 0.060 chamfer	+/-0.010	30° x 0.060	✓			
88.93	+/-0.030	88.93	✓		tape	

Measured by: DAS 238	Date: 16/12/15
Audited by: 20 16-12-19	Date:

HAAS Section						
1.526	+0.000/-0.030	1.496	✓		HJP-04	vern
7.500	+/-0.010	7.500	✓			
27.750	+/-0.010	27.750	✓			
31.750	+/-0.010	31.750	✓			
35.250	+/-0.010	35.250	✓			
3.300	+/-0.010	3.300	✓			
0.200	+/-0.010	0.200	✓			
3.520	+/-0.010	3.520	✓			
0.687	+0.010/-0.000	0.691	✓			
R0.062	+/-0.010	0.062	✓			
Ø0.484	+0.005/-0.001	0.488	✓			

Measured by: 33 DAS	Date: 16/12/15
Audited by: 20 16-12-19	Date:

Rev	Date	Change	Revised by	Approved
A	06.04.24	New Issue P/O D3391-015/-025	KJ/JLM	
B	06.06.19	Dwg revision update	KJ/JLM	
C	07.04.20	Ø0.208 dimension removed	KJ/JLM	
D	07.09.06	0.400 dimension removed	KJ/JLM	
E	07.11.23	Dwg Rev. updated	KJ/EC/DD	
F	09.04.27	Dimensions updated per Rev H and NCR09-028	KJ/JLM	
G	09.11.16	Dimension 0.200 removed	KJ	
H	11.06.21	Dimension 44.995 removed	KJ	
I	12.05.15	Dwg Rev updated	KJ	
J	12.05.23	Dimension updated	KJ	
K	12.10.15	88.93 dimension removed	KJ	
L	12.11.28	88.93 dimension added	KJ	
M	16.06.23	Dimensions updated per Rev J	KJ	

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



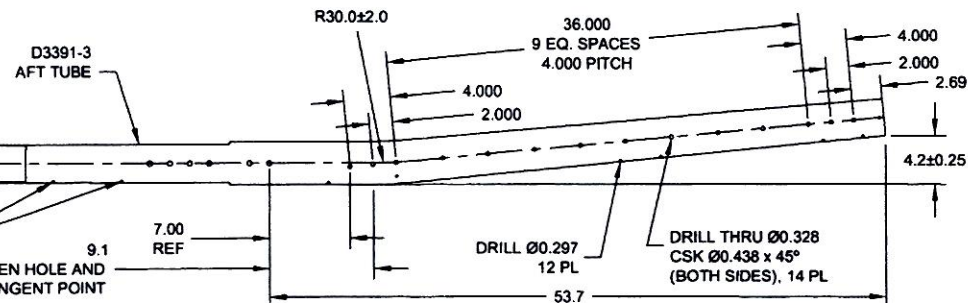
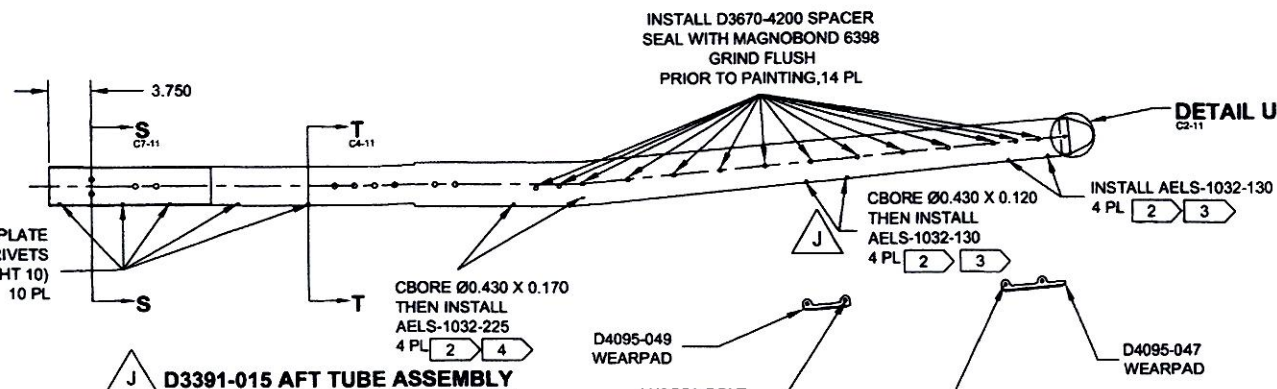
QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QS1042) Approval	
Description Work Order Deviation		Disposition		Completed By	
240 CS PBL				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
OTHER :					

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 154257

*Vec
62
16/12/07*



D3391-015 AFT TUBE ASSEMBLY PARTS LIST

QTY	PART NUMBER	DESCRIPTION
X	D3391-015	AFT TUBE ASSEMBLY
1	D2646	AFT CAP
1	D3391-3	AFT TUBE
14	D3670-4200	SPACER
2	D3672-1	WASHER
1	D4095-049	WEARPAD
1	D4095-047	WEARPAD
8	AELS-1032-130	INSERT
4	AELS-1032-225	INSERT
4	ALS4-428-165	INSERT
6	AN3C4A	BOLT
4	AN3C5A	BOLT
20	MS20601AD4	RIVET, BLIND
10	MS21075L5	NUT PLATE, FLOATING
10	NAS1149C0332R	WASHER

NOTES:

- 1) COAT ALL EXPOSED FASTENERS WITH LPS "LPS PROCYON"
- 2) USE DART DRILL TEMPLATE DT8217 TO LOCATE AND DRILL Ø0.297 AND Ø0.375 HOLES FOR WEARSHOE INSERTS AND NUTPLATES. CBORE AS NOTED AND INSTALL INSERT/NUTPLATES EXCEPT WHERE INDICATED.
- 3) ENSURE WALL THICKNESS IS BETWEEN 0.070 AND 0.130 BEFORE INSTALLING INSERT
- 4) ENSURE WALL THICKNESS IS BETWEEN 0.130 AND 0.225 BEFORE INSTALLING INSERT

BENDING AND DRILLING DETAIL

RELEASED
2016-04-28

DESIGN	PH	DART AEROSPACE USA, INC	
DRAWN	ML	EUGENE, OR	
CHECKED	CP	DRAWING NO.	REV. J
MFG. APPR.	<i>[Signature]</i>	D3391	SHEET 8 OF 11
APPROVED	<i>[Signature]</i>	TITLE	SCALE
DE APPR.	<i>[Signature]</i>	412 FLOAT SKIDTUBE	NTS
DATE	16.01.14	COPYRIGHT © 2005 BY DART AEROSPACE USA, INC THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

DQA: _____ Date: _____



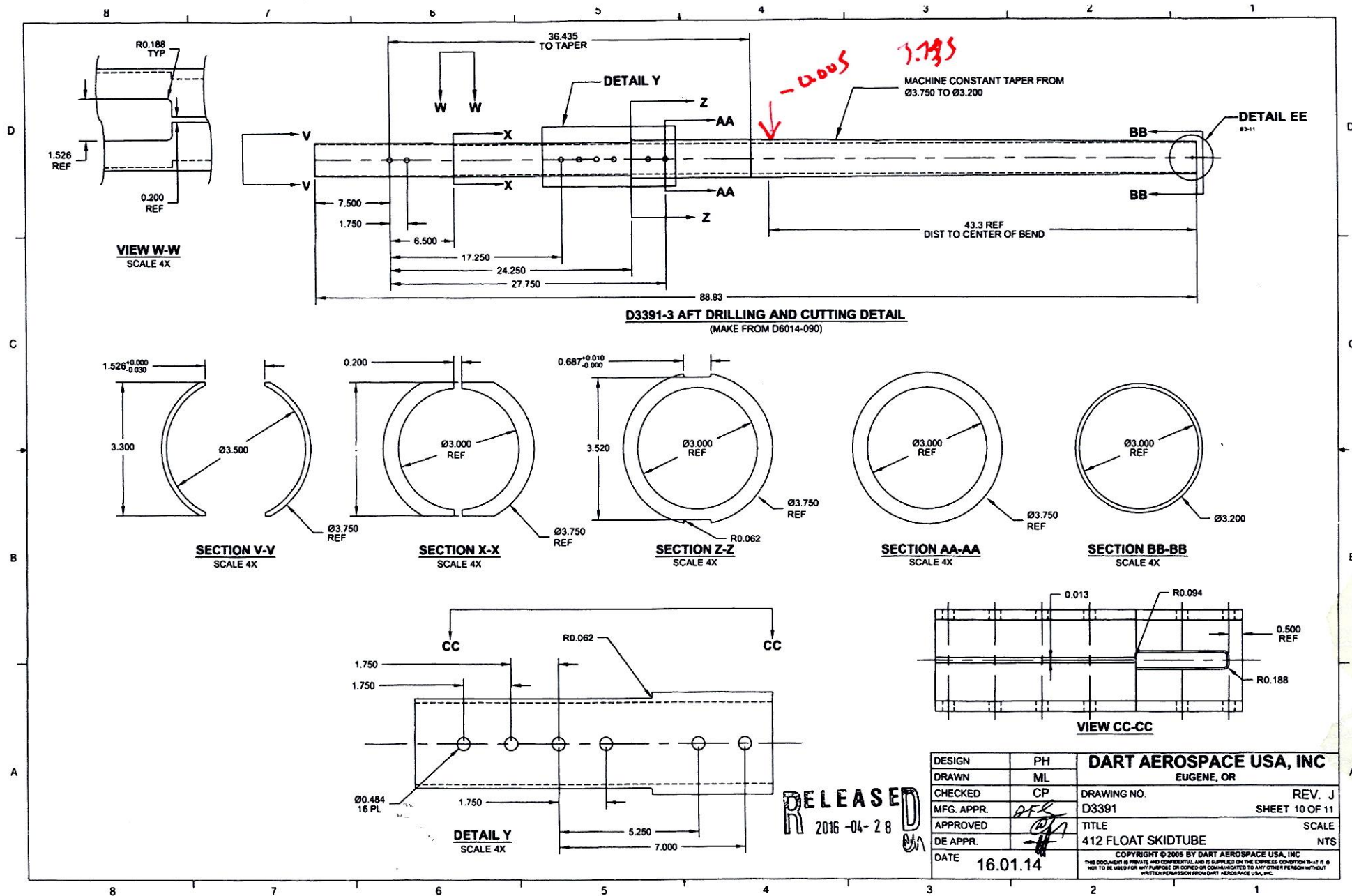
WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval 	
Description Work Order Deviation				Disposition					
								Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	

Root Cause			FAULT CATEGORY							
Environment	☐	No Re-verification	☐	Pressure/Forced	☐	Temperature/Cure	☐	Power Loss/Surge	☐	Positioned Wrong
Design	☐	Operator	☐	Bending	☐	Set-up	☐	Folio/Program	☐	Outside Dimensions
Doc/Data	☐	Offset/Setup	☐	Centre Not Concentric	☐	BOM/Route	☐	Grain	☐	Over/Under tolerance
Equip/Tooling	☐	Supplier	☐	Cracks	☐	Broken/Damage/Defect	☐	Weld	☐	Part Incorrect
Handling/Pre	☐	Training	☐	Crimp/Kink/Ripple/Wave	☐	Inspection Incomplete/Unqualified	☐	Wrong Stock Pulled	☐	Part Lost/Missing
Material	☐	Use for Testing	☐	Cuffs	☐	Contamination	☐	Out of Sequence	☐	Part Moved
Internal Transport	☐	Poor Information	☐	Crushing	☐	Countersink	☐	Off-set	☐	Drawing
Tribal Knowledge	☐	Rushing	☐	Heat Treat	☐	Cut Too Short	☐	Mislabeled	☐	Finish
LOA	☐	Product Improvement	☐	Wave/Twist in Tube	☐	Instructions Incomplete/Unclear	☐	Fit/Function	☐	Misread
Substation	☐	Process Improvement	☐	Marks/Chatter	☐	Drill Holes	☐	Misaligned/off center	☐	Turning Sequence
Past Expiry Date	☐	Manufacturing Process	☐	OTHER :						
Misidentified	☐	Past Due	☐							



DESIGN	PH	DART AEROSPACE USA, INC	
DRAWN	ML	EUGENE, OR	
CHECKED	CP	DRAWING NO.	REV. J
MFG. APPR.	<i>[Signature]</i>	D3391	SHEET 10 OF 11
APPROVED	<i>[Signature]</i>	TITLE	SCALE
DE APPR.	<i>[Signature]</i>	412 FLOAT SKIDTUBE	NTS
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DQA: _____ Date: _____

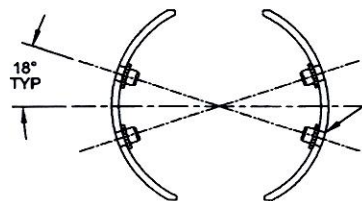
WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : _____					

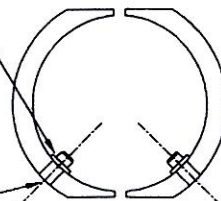


SECTION S-S D6-4.9
SCALE 5X

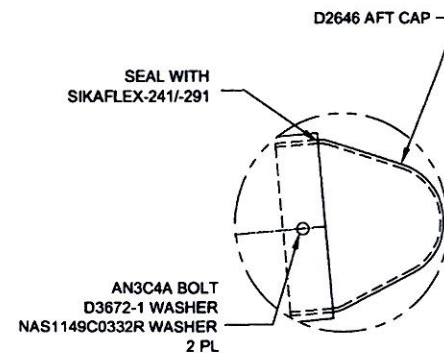
DRILL $\varnothing 0.391$
CBORE $\varnothing 0.516 \times 0.040$ DEEP
INSTALL ALS4-428-165 INSERT
4 PL

USE DT8217 DRILL TEMPLATE
TO LOCATE HOLES AND OPEN
TO $\varnothing 0.375$

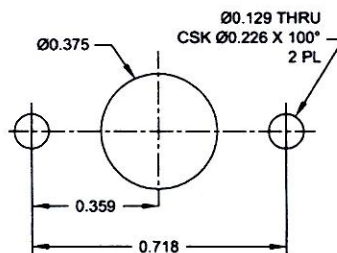
MS21075L5 NUTPLATE
REF



SECTION T-T D6-4.9
SCALE 5X
5 PL



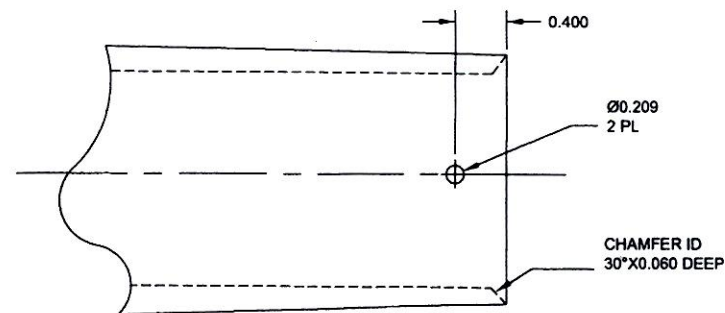
DETAIL U D1-4.9
SCALE 5X



DRILLING DETAIL DD
SCALE 10X
D7-4.9



1



DETAIL EE
SCALE 2X
D1-11



NOTES:
1) USE INDUSTRY STANDARD NUT PLATE DRILL JIG IF REQUIRED.

RELEASED
2016-04-28

DESIGN	PH	DART AEROSPACE USA, INC	
DRAWN	ML	EUGENE, OR	
CHECKED	CP	DRAWING NO.	REV. J
MFG. APPR.		D3391	SHEET 11 OF 11
APPROVED		TITLE	SCALE
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DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :				MRB (QS1042) Approval 	
Description Work Order Deviation				Disposition					
								Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐							
OTHER : ☐									

DQA:

Date:

2017-04-05



QA Closed:

Date:

MAR 10 2017

WORK ORDER NON-CONFORMANCE / UPDATE

Work Order update only ☐

Work Order: <u>154257</u> Part No: <u>D 3391-015</u> NCR No. <u>17-1340</u>		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☒ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Cross tube ☐ Water Jet ☐ Engineering ☐ Machining ☒ Small Fab ☐ Prod. Eng. Coord. ☐ Quality ☐ Thermoforming ☐ Finishing ☐ Rec/Store/Packaging ☐ Other ☐ Large Fab ☐ Composite ☐ Supplier ☐							
Date: <u>16/12/15</u>		Step #: <u>100</u>		QTY Effective: <u>1</u>			MRB (QSI042) Approval DAS 12 16/12/15 9-89				
Description Work Order Deviation				Disposition				Completed By DAS 12 16/12/15 9-89			
C.D. @ 43.3" FROM AFT END IS Ø 3.735. (avg = Ø 3.750).				Acceptable. D607 allow ± 0.016 in quality. Critical area is at end of skid mid-tube interface.				Lead hand / Supervisor Approval Verification DAS 17-1-4 03 9-89			
								QC / QA Coordinator Approval DAS 9 17-01-04 9-89			
Root Cause Environment ☐ No Re-verification ☐ Design ☐ Operator ☒ Doc/Data ☐ Offset/Setup ☐ Equip/Tooling ☐ Supplier ☐ Handling/Pre ☐ Training ☐ Material ☐ Use for Testing ☐ Internal Transport ☐ Poor Information ☐ Tribal Knowledge ☐ Rushing ☐ LOA ☐ Product Improvement ☐ Substation ☐ Process Improvement ☐ Past Expiry Date ☐ ☒ Manufacturing Process Misidentified ☐ Past Due ☐				FAULT CATEGORY Pressure/Forced ☐ Temperature/Cure ☐ Power Loss/Surge ☐ Positioned Wrong ☐ Bending ☒ Set-up ☐ Folio/Program ☐ Outside Dimensions ☐ Centre Not Concentric ☐ BOM/Route ☐ Grain ☐ Over/Under tolerance ☐ Cracks ☐ Broken/Damage/Defect ☐ Weld ☐ Part Incorrect ☐ Crimp/Kink/Ripple/Wave ☐ Inspection Incomplete/Unqualified ☐ Wrong Stock Pulled ☐ Part Lost/Missing ☐ Cuffs ☐ Contamination ☐ Out of Sequence ☐ Part Moved ☐ Crushing ☐ Countersink ☐ Off-set ☐ Drawing ☐ Heat Treat ☐ Cut Too Short ☐ Mislabeled ☐ Finish ☐ Wave/Twist in Tube ☐ Instructions Incomplete/Unclear ☐ Fit/Function ☐ Misread ☐ Marks/Chatter ☐ Drill Holes ☐ Misaligned/off center ☐ Turning Sequence ☐						OTHER: ☐	

QA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: <u>154257</u> Part No. <u>123391-015</u> NCR No. _____		DISPOSITION Rework ☒ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width:100%;"> <tr> <td>Skid-tube ☒</td> <td>Cross tube ☐</td> <td>Water Jet ☐</td> <td>Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>				Skid-tube ☒	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐																																																																																																																	
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Date: <u>17/1/3</u>		Step #: <u>180</u>		QTY Effective: <u>1</u>		MRB (QSI042) Approval DAS 12 9-89 <u>17/1/3</u>																																																																																																																																	
Description Work Order Deviation <u>φ0.516 c'bore too tight for insert head.</u> <u>Aft bend is 0.04" over tolerance.</u>				Disposition <u>Acceptable to c'bore φ0.53125</u> <u>No effect on strength of tube.</u> <u>Aft bend acceptable, additional height</u> <u>lowers potential stress due to higher drag</u> <u>moment.</u>				Completed By DAS 12 9-89 <u>17/1/3</u> Lead hand / Supervisor Approval Verification <u>17-1-4</u> <u>03</u> <u>9-89</u>																																																																																																																															
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